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C.V. Yoav Eichen

Monday, February 25, 2002



# Qurriculum Vitae

Name:

**Yoav Eichen** 

Identification number

057170219

Date of birth:

02.06.1961

Place of birth:

Israel

Family status:

Married (Galia) + 2 (Shahar, Dror)

Academic degrees:

1993

Ph.D. in Organic Chemistry. The Hebrew University of Jerusalem, with

Prof. I. Willner, (Cum Laude).

1986

B.Sc. in Chemistry, The Hebrew University of Jerusalem, (Cum Laude).

# Academic appointments:

2001	_	Drecent	

Associate Professor, Technion - Israel Institute of Technology,

Department of Chemistry, Technion City, Haifa 32000, Israel.

1998 - 2001

Senior Lecturer, Technion - Israel Institute of Technology, Department

of Chemistry, Technion City, Haifa 32000, Israel.

1997 - Present

Member of the Solid-State Institute, Technion - Israel Institute of

Technology, Technion City, Haifa 32000, Israel.

1994 - 1998

Lecturer, Technion - Israel Institute of Technology, Department of

Chemistry, Technion City, Heifa 32000, Israel.

Apr. 1994 - Sept. 1994

Maître de Conférence invité au Collège de France, Paris, France.

1992 - 1994

Post doctoral research at the laboratory of Prof. J.M. Lehn, Université

Louis Pasteur, Laboratoire de Chimie Supramoléculaire, 4, Rue Blaise

Pascal, 67000 Strasbourg, France.

# Research interests:

Solid-state supramolecular chemistry. a) Fabrication of nanometer-scale electronic components using self-assembly processes. b) Site effects on chemical and physical properties of materials. c) Structure - activity correlation in organic functional materials. Optical and electrical properties of organic functional materials.

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Teaching experience:	
2000 -	Organic Photochemistry (undergraduate and graduate students).
1997 -	Experimental organic chemistry II (second lab.), Technion - Israel
	Institute of Technology.
1996 -	Organic chemistry I for chemists, chemical engineers, medicine
	students and biologists, Technion - Israel Institute of Technology.
1995 -	General chemistry for Aerospace engineers, Technion - Israel Institute
2330	of Technology.
1995 -	Supramolecular chemistry (undergraduate and graduate students),
	Technion - Israel Institute of Technology.
1995 -	Experimental organic chemistry I (first lab.), Technion - Israel Institute
1333	of Technology.
1995	Organic chemistry, Oranim - Haifa University.
1770	

<b>Technion</b>	Activities:
1	

7330 X300	Coordinator of the high school students - department activities.
2220 2011	In charge of the open house days at the department.
1995 - 1996	Secretary of the faculty board.

#### **Public Professional Activities:**

Member of the organizing committee of the XII Members of the organizing
Symposium on Supramolecular Chemistry.
Editorial Board Member of Supramolecular Chemistry.
Member of the organizing committee of the Israel-Japan symposium on
supramolecular chemistry, 1999.
Member of the advisory board of the IUPAC Symposium on
Photochemistry 2000.
Member of the organizing committee of the 62nd meeting of the Israel
Chemical Society.
Member of the chemistry committee at the Ministry of Education.

2001	•	Outstanding Young Scientist Award, The Israel Chemical Society, Israel.
1998		 Michael Landau award, administrated by the Mifal Hapayis, Israel.

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1998	David Ben Aharon award, Technion - Israel Institute of Technology, Israel.
1998	Gutwirth award, Technion - Israel Institute of Technology, Israel.
1997	Yosefa and Leonid Allshwang award, administrated by the Israel
·	Science Foundation (ISF), Israel.
1997	Multidisciplinary award, Technion - Israel Institute of Technology,
•	Israel.
1994	Gerhadt Schmidt award, Weizmann Institute, Israel.
1993	Chateaubriand post-doctoral fellowship, France.
1992	Wolfson post-doctoral fellowship, Israel.
1990	David Ben-Gurion award, Administrated by the Histadrut Hapoalim,
	Israel.
1989	Award for excellence for chemistry research students, the Israel
•	Chemical Society, Israel.
1986	Award for excellence, the Hebrew University of Jerusalem, Israel.

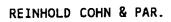
. 1996 -

1996 - 1997

Graduate students:	
2001 -	Husein Salman(together with Prof. S. Speiser).
2002 -	Alex Sterenberg
2002 -	Yael Abraham
2000 -	Batia Blumer
2000 -	Shai Tel
1999 -	Carmit Hertzog, Ms., submitted her thesis.
1996 - 2001	Michael Grishko, PhD, (official supervisor), Graduated, 2001.
1996 -	Oded Godsi, PhD, (together with Prof. U. Peskin).
1996 - 2000	Olga Epstein, PhD, (together with Prof. E. Ehrenfraund), Graduated,
	2001.
1995 - 2001	Boaz Turner, PhD, Graduated, 2001.
1995 - 2001	Suliman Khatib, PhD, Graduated, 2001.
1995 - 2000	Gregory Nakhmanovitch, PhD, Graduated, 2001.
1995 - 2000	Dorft Canfi (Scabini), PhD, thesis in preparation.
Other coworkers:	
1998 - 2000	Dr. Amihood Doron, Research associate.

Dr. Vladimir Gorelik, Research associate.

Dr. Olga Kessler, Post Doctoral fellow.



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# Research Grants (my part unless noted):

2000 - 2002	"Photoreactors based on conjugated polymers"; MOS, 90000\$/3years.
2000 - 2002	"Plastic solar cells"; MOS, 180000\$/3years.
2000 - 2002	"Preparation and characterization of new DNA - conjugated polymer
•	hybrids"; The Israel Science Foundation, Administrated by The Israel
	Academy of Sciences and Humanities. 135000\$/3years.
1998 - 2001	Nanoelectronics by biotechnology", Bikura, Administrated by The Israel
	Academy of Sciences and Humanities. 100000\$/3years.
1999 - 2001	"Site Effects In Solid - State Chemistry"; Israel-USA Binational
	Foundation Project. 57000\$/3years.
1999 - 2000	"Plastic solar cells"; EC project, 40000 EU/2years.
1998	"Nanoelectronics by Biotechnology", Supported by the Technion.
	970000\$ for the entire project.
1998 - 1999	"New Organic-Based Electronic Materials"; Israel-India Project, MOS,
	32000\$/2years.
1997 - 1999	"Photo- and Electro-Responsive Materials: Design, Preparation and
	Characterization of New Materials Having Switchable Proton Affinity";
	The Israel Science Foundation, Administrated by The Israel Academy of
	Sciences and Humanities. 105000\$/3years.
1996 - 1998	"Development of Organic Based Electronic Materials for Effective
	Electroluminescence and Their Application in Tailoring Optoelectronic
	Micro-Addressable Devloes"; The Israel Ministry of Arts and Science.
	P.I.: Prof. I. Willner, 195000\$/3year.
1996 - 2000	"Preparation and Characterization of New Molecular Receptors for the
•	Selective Complexation, Separation and Identification of TNT Traces;
	The Israeli Police, 100000\$/4years.



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#### List of Publications

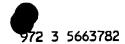
## Refereed Scientific Publications

- 1. Y. Eichen, "Control of Thermal and Photochemical Processes in Supramolecular Assemblies", Ph.D. Thesis, The Hebrew University Of Jerusalem, Jerusalem, Israel, 1993.
- Willner, Y. Eichen, "TiO<sub>2</sub> and CdS Colloids Stabilized by β-Cyclodextrins: Tallored Semiconductor - Receptor Systems as a Means to Control Interfacial Electron - Transfer Processes", J. Am. Chem. Soc., 109, 6862-6863, 1987.
- Willner, Y. Eichen, A. J. Frank, "Tailored Semiconductor Receptor Colloids: Improved Photosensitized H<sub>2</sub> Evolution from Water with TiO<sub>2</sub> - (β-Cyclodextrin) Colloids", J. Am. Chem. Soc., 111, 1884-1886, 1989.
- Willner, Y. Eichen, E. Joselevich, "Photosensitized Electron Transfer Reactions and H<sub>2</sub> Evolution in Organized Microheterogeneous Environments: Separation of Ground State Xanthene Bipyridinium Complex by Means of SiO<sub>2</sub> Colloids", J. Phys. Chem., 94, 3092-3098, 1990.
- Willner, T. Tsfania, Y. Eichen, "Photocatalyzed and Electrocatalyzed Reduction of Vicinal Dibromides and Activated Ketones Using Ru(I) -tris- Bipyridine as Electron - Transfer Mediator", J. Org. Chem., 55, 2858-2662, 1990.
- Willner, J. Rosengaus, Y. Eichen, "Synthesis, Structure and Redox Properties of Linked Bipyridinium - Anthraquinone Compounds: Design of Photosensitizer - Electron Acceptor Triad Assemblies", New J. Chem., 15, 55-64, 1991.
- Willner, M. Rosen, Y. Eichen, "Characterization of the Hydrogenation Processes of Aliyl Alcohol at a Pt Electrode using a Double Galvanostatic Pulse technique", J. Electrochem. Soc., 138, 434-439, 1991.
- Willner, Y. Eichen, S. Sussan, B. Shoam, "Lanthanide Complexes as Carriers for the selective Transport of Dyes and Amino Acids In Liquid - Liquid Membrane Systems", New J. Chem., 15, 879-881, 1991.
- Willner, Y. Eichen, M. Rabinovitz, R. Hofman, S. Cohen, "Structure, Thermodynamic and Kinetic Properties of Eosin - Bipyridinium Complexes", J. Am. Chem. Soc., 114, 637-644, 1992.
- 10. Willner, Y. Eichen, A. Doron, S. Marx, "Effects of Electrostatic and π-π Interactions on the Stability of Xanthene dye 4,4'- Bipyridinium Complexes: Structural Design of a Geared Supramolecular Machine", Isr. J. Chem., 32, 53-59, 1992.



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- Willner, S. Marx, Y. Eichen, "Photoswitchable Association of an Azobenzene Bipyridinium Diad to Eosin: Photostimulated "On-Off" Guest Binding", Angew. Chem. Int. Ed. Engl., 31, 1243-1244, 1992.
- Willner, Y. Eichen, E. Joselevich, A. J. Frank, "Characterization of Rose Bengal N,N'- Dimethyl -4,4'- Bipyridinium Complexes and Their Separation in Aqueous SiO<sub>2</sub> Colloids: Photophysical Properties of Rose-Bengal in the Microheterogeneous System", J. Phys. Chem., 96, 6061-6066, 1992.
- H. Durr, R. Schwarz, I. Willner, E. Joselevich, Y. Eichen, "Formation of Supramolecular Complexes of Ru(II) -tris- Oligoethyleneglycol Bipyridazines with Alkali and Alkali Earth Metal lons", J. Chem. Soc. Chem. Commun., 1338-1339, 1992.
- 14. Willner, Y. Eichen, A.J. Frank, M.A. Fox, "Photoinduced Electron-Transfer Processes Using Organized Redox- Functionalized Bipyridinium -Polyethyleneimine-TiO<sub>2</sub> Colloids and Particulate Assemblies", J. Phys. Chem., 97, 7264-7271, 1993.
- 15. Willner, J. Rosengaus, Y. Eichen, "Effects Controlling the Conformational Selectivity and Association Parameters of H-Bonded Assemblies Between di and tri-Aminotriazines and Bemegride", J. Phys. Org. Chem. 6, 29-43, 1993.
- Willner, Y. Eichen, B. Willner, "Supramolecular Semiconductor Receptor Assemblies: Improved Electron Transfer at TiO<sub>2-α</sub>-Cyclodextrin Colloid Interfaces", Research on Chemical Intermediates, 20, 681-700, 1994.
- Y Eichen, J.M. Lehn, M. Scherl, D. Haarer, R. Casalegno, K. Kuldova, A. Corval , H.P. Trommsdorff, "Long-Lived Photoinduced Proton-Transfer Processes", Chem. Commun. 713-714, 1995.
- Y. Eichen, J.-M. Lehn, M. Scherl, D. Haarer, J. Fischer, A. DeCian, A. Corval, H. P. Trommsdorff, "Photochromism Dependent on Crystal Packing: Photoinduced and Thermal Proton-Transfer Processes in Single Crystals of 6-(2,4-Dinitrobenzyl)-2,2'-Bipyridine", Angew. Chem. Int. Ed. Engl., 34, 2530-2533, 1995.
- M. Scherl, D. Haarer, J. Fischer, A. DeCian, J.-M. Lehn, Y. Eichen, "Proton-Transfer Processes in Well Defined Media: Experimental Investigation of Photoinduced and Thermal Proton-Transfer Processes in Single Crystals of 2-(2,4-Dinitrobenzyl) Pyridine Derivatives", J. Phys. Chem., 100, 16175-16186, 1996.
- 20. A. Corval, K. Kuldova, Y. Eichen, Z. Pikraminou, J.-M. Lehn, H. P. Trommsdorff, "Photochromism and Thermochromism driven by Intramolecular Proton Transfer in Dinitrobenzylpyridine Compounds", J. Phys. Chem., 100, 19315-19320, 1996.



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- S. Khatib, M. Botoshansky, Y. Eichen, "Effects of Crystal Packing on Photoinduced Proton Transfer Processes of 2,4-Dinitrobenzyl Pyridine Derivatives", Acta Cryst. B. 53, 306-316, 1997.
- Willner, S. Marx-Tibbon, Y. Elchen, S. Cohen, M. Kaftory, "Supramolecular Donor Acceptor Complexes of Association of Dichlorofluorescein and cis- and trans-4,4'-(N,N'-Dimethylpyridinium) Ethylene", J. Phys. Org. Chem. 10, 435-444, 1997.
- Y. Eichen, M. Botoshansky, U. Peskin, M. Scherl, D. Haarer and S. Khatib, "Site Selective Processes: The Role of Environment in the Control of Proton Transfer Processes in Crystalline Systems of 2-(2,4-Dinitrobenzyl)-3-Methyl Pyridine", J. Am. Chem. Soc., 119, 7167-7168, 1997.
- 24. E. Braun, Y. Eichen, U. Sivan, G. Ben-Yoseph, "DNA Templated Self-Assembly of a Conductive Wire Connecting Two Electrodes", Nature, 391, 775-778, 1998.
- 25. Tumer, M. Botoshansky, Y. Eichen, "Extended Calbpyrroles: Meso- Substituted Calix[β]pyrroles", Angew. Chem. Int. Ed. Eng., 37, 2475-2478, 1998.
- Y. Eichen, G. Nakhmanovich, V. Gorelik, O. Epshtein, J. M. Poplawski and E. Ehrenfreund, "Effect of Protonation Deprotonation Processes on the Electro-optic Properties of Bipyridine-Containing Poly(p-Phenylene-Vinylene) Derivatives", J. Am. Chem. Soc., 120, 10463-10470, 1998.
- 27. T. Nunes, Y. Eichen, M. Bastos, H.D. Burrows, H.P. Trommsdorff, "Nuclear Magnetic Resonance Spectroscopy Studies of 2-(2,4-Dinitrobenzyl) Pyridine and Long-Lived Photoinduced Products", J. of Physics D, Applied Physics. 32, 2108-2117, 1999.
- 28. E. Berkovich, J. Klein, T. Sheradsky, E.R. Silcoff, K.T. Ranjit, I. Willner, G. Nakhmanovich, V. Gorefik, Y Eichen, "Adjustable Electroluminescence: Blue-Green to Red Organic Light-Emitting Diodes Based on Novel Poly-Nonconugated Oligomers", Synthetic Metals, 107, 85-91, 1999.
- 29. A. Schmidt, S. Kababya, M. Appel, S. Khatib, M. Botoshansky, Y. Eichen, "Measuring the Temperature Width of a First Order Single Crystal to Single Crystal Phase Transition Using Solid State NMR: Application to the Polymorphism of 2(2,4-Dinitrobenzyl)-3-Methylpyridine", J. Am. Chem. Soc., 121, 11291-11299, 1999.
- 30. Y. Eichen, G. Nakhmanovich, O. Epstein, E. Ehrenfreund, "Photoinduced Charge Separation and Photovoltaic Properties of Polypyrrole Having Pendant Bipyridinium Electron-Acceptor Groups", J. Phys. Chem. B, 104, 770-774, 2000.
- 31. B. Turner, A. Shterenberg, M. Kapon, K. Suwinska, Y. Eichen, "Selective Anion Binding and Solid-State Host-Guest Chemistry of Extended Cavity Calix[6]pyrrole", Chem. Commun., 13-14, 2001.



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- O. Epstein, G. Nakmanovich, Y. Eichen, E. Ehrenfreund, "Dispersive Dynamics of photoexcitations in Conjugated Polymers Measured by Photomodulation Spectroscopy", Phys. Rev. B. 63, 125206 (1-6), 2001.
- 33. K.S. Narayan, K.V. Geetha, G. Nakmanovich, E. Ehrenfreund, Y. Eichen, "Photocurrent Response of Bipyridine Containing *poly(p*-phenylene-vinylene) Derivatives", J. Chem. Phys. B, 105, 7671-7677, 2001.
- O. Godsi, U. Peskin, M. Kapon, E. Natan, Y Eichen, "Site Effects in Controlling Reactivity in Crystals: Solid-State Photochromism of N-(n-propyl) nitrospiropyrane", Chem. Commun. 2132-2133, 2001.
- 35. B. Ray, T. Gueta Neyroud, M. Kapon, Y. Eichen, M.S. Eisen; "Synthesis, Characterization, and Catalytic Activities for the Polymerization of Olefins Promoted by Zirconium(III) and Titanium(III) Allyl Complexes", Organometallics, 20, 3044-3055, 2001.
- 36. R.M. Nagler, Y. Eichen, A. Nagler, "Redox metal chelation ameliorates radiation-induced bone marrow toxicity in a mouse model", Radiat. Res. 158, 205-209, 2001.
- A. Nagler, Y. Eichen, V. Barak, R. Nagler, "Redoxmetal chelation ameliorates radiation-induced bone marrow toxicity in a mouse model", Blood, 98, 1616, 2001.
- 38. B. Turner, A. Shterenberg, M. Kapon, K. Suwinska, Y. Eichen, "The Role of Template in the Synthesis of meso-hexaphenyl-Calix[6]:pyrrole: Trihalogenated Compounds as Templates for the Assembly of a Host with a Trigonal Cavity". Chem. Commun., 404-405, 2002.
- 39. B. Turner, A. Shterenberg, M. Kapon, K. M. Botoshansky, Suwinska, Y. Eichen, "Self-Assembled Calix[6]pyrrole Capsules: Solid-State Encapsulation of Different Guests in Preorganized Calix[6]pyrrole Capsules". Chem. Commun., in press...

# Invited Papers (Refereed)

- 1. Y. Eichen, E. Braun, U. Sivan, G. Ben-Yoseph, "Self Assembly of Nanoelectronic Components and Circuits Using Biological Templates", Acta Polym., 49, 663-670, 1998.
- S, Khatib, S. Tal, O. Godsi, U. Peskin, Y. Elchen, "Site selective processes: A combined theoretical and experimental investigation of thermally activated tautomerization processes in 2(2,4-dinitrobenzyl)pyridine derivatives", Tetrahedron, 56, 6753-6761, 2000.



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## Conference Proceedings (Refereed)

- G. Nakhmanovich, J.M. Poplawski, Y. Shi, V. Gorelik, Y. Eichen, E. Ehrenfreund, "Tailoring receptors to Semiconducting Polymers: Preparation and Optical Characterization", Synthetic Metals, 84, 883–884, 1997.
- K. Kuldova, Y. Eichen, P. Emele, H. P. Trommsdorff, "Excited State Proton Transfer in Aminoand Hydroxy- Phenyl Heteroazoles and Related Compounds", J. Lum., 72-74, 513-514, 1997.
- Y. Eichen, G. Nakhmanovich, V. Gorelik, J.M. Poplawski, E. Ehrenfreund, "Tuning the Electroluminescence and Photoluminescence of PPV Derivatives by Protonation - Deprotonation Processes". Proceedings of SPIE, 3148, 345-351, 1997.
- 4. Y.H. Kim, G. Nakhmanovich, O. Epshtein, V. Gorelik, Y. Eichen, E. Ehrenfreund, "Energy transfer from π-conjugated ligand to rare-earth ions in (diethlenyl-bipyridazine) Eu<sup>3+</sup> complex", Synthetic Metals, 101, 240-241, 1999.
- G. Nakhmanovich, O. Epshtein, V. Gorelik, J.M. Poplawski, J. Oiknine-Schlesinger, E. Ehrenfreund, Y. Eichen, "Protonation-deprotonation effects on the electrooptics of bipyridine containing PPV derivatives", Synthetic Metals, 101, 269-270, 1999.
- O. Epstein, G. Nakmanovich, Y. Eichen, E. Ehrenfreund, "Dispersive Relaxation of photoexcited defects in bipyridine-PPV Derivatives Measured by Photoinduced Absorption", Synthetic Metals, 119, 585-586, 2001.
- 7. G.K. Varier, K.S. Narayan, G. Nakmanovich, Y. Eichen, E. Ehrenfreund, "Electric field dependent photogenerated charge carrier separation in bipyridine containing poly(p-phenylene vinylene)", Synthetic Metals, 121, 1559-1560, 2001.
- M. Koppe, C.J. Brabec, N.S. Saricifici, Y. Eichen, G. Nakhmanovich, E. Ehrenfreund, O. Epstein,
  W. Heiss, "Er<sup>3+</sup> emission from organic complexes embedded in thin polymer films", Synthetic
  Metals, 121, 1511-1512, 2001.

### Publications in Popular Journals

- H.P. Trommsdorff, G. Feio, D. Haarer, J.M. Lehn, H. Burrows, M. Bastos, R.Casalegno, A. Corval, Y. Eichen, H. Gil, K. Kuldova, T. Nunes, M. Scherl, "Photochromic Materials Based on Long-Lived Photo Induced Proton Transfer", Phantoms Newsletter 9, 9-11, 1995.
- Y. Eichen, E. Braun, U. Sivan, "Self-Assembly of Nanoelectronic Components and Circuitry Using Biological Templates", Chemistry 41, 21-38, 1998 (Hebrew).
- Y. Eichen, E. Braun, U. Sivan, "Self-Assembly of Nanoelectronic Components and Circuitry Using Biological Templates", Hi-Tech 48, 31-37, 1998 (Hebrew).



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 U. Peskin, S. Khatib, Y. Elchen, "Supramolecular Chemistry: The Role of the Chemical Environment in Chemical Reactions". Chemistry 46, 32-38, 1999 (Hebrew).

#### Patents

- E. Braun, Y. Eichen, U. Sivan, G. Ben-Yoseph, "Microelectronic components, their fabrication and electronic networks comprising them", 1998, WO9904440.
- D. Haarer, Y. Eichen, "Zeit-Temperatur Integrator" (Time-temperature History Indicator), 1998, DE19803208, WO9939197.
- 3. E. Braun, Y. Eichen, U. Sivan, "Detection of an Entity in a Sample", 1998, WO9957550.
- 4. E. Braun, Y. Eichen, U. Sivan, "Method for Gold Deposition", 1998, WO0025138.

### Participation in Local and international Conferences

#### Invited Talks

- 1. "Novel n-Dopable Oilgomers and Polymers", The 67<sup>th</sup> meeting of the Israel Chemical Soc., 2002, Jerusalem, Israel..
- 2. "Preparation and Host-Guest Properties of Calix[6]Pyrrole", VIII<sup>th</sup> International Seminar on Inclusion Compounds (ISIC-8), September 1-6, 2001, Warsaw (Popowo), Poland.
- \*Preparation and Electrooptical Characterization of Bipyridine Derivatives of Conjugated Polymers\*, ICSM2000, 2000, Gad-Gastein, Austria.
- 4. "Electrical and other ways to detect DNA Fragments", The 65<sup>th</sup> meeting of the Israel Chemical Soc., 2000, Beer-Sheva University, Israel.
- 5. "Supramolecular Chemistry: From Molecules to Materials" Scientia Europra 4, 1999, Strasbourg, France.
- 6. "Self-Assembled Nanoelectronics using DNA Templates" (poster in a poster conference), XIX GIF Meeting, 1999, Jena, Germany.
- "Self-Assembled Nanoelectronics using DNA Templates", XIII International Winterschool on Electronic Properties of Novel Materials. Kirchberg, Tirol, 1999, Austria.
- 8. "Self-Assembled Nanoelectronics using DNA Templates", The Second SANKEN Symposium, 1999, Osaka University, Japan.

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- "Self-Assembled Nanoelectronics using DNA Templates", ICSM98, 1998, Montpieller, France.
- 10. "Self-Assembled Nanoelectronics using DNA Templates", ISMRI-10, 1998, Warsaw, Poland.
- 11. "Self-Assembled Nanoelectronics using DNA Templates", POC-98, 1998, Jerusalem, Israel.
- 12. "Site Effects on Tautomerization Processes: Experimental and Theoretical Investigation", Israel - Italy symposium on physical organic chemistry, 1998, Jerusalem, Israel.
- 13. "Self-Assembled Nanoelectronics using DNA Templates", Science at the Turn of the Century, 20 Years of Wolf Prizes, 1998, Jerusalem, Israel.
- 14. "Self-Assembled Nanoelectronics using DNA Templates", From Clusters to Nano Wires and Surfaces, a one day symposium to honnor the 1998 Wolf Prize winners in Chemistry, 1998, Tel-Aviv University, Israel.
- 15. "Self-Assembled Nanoelectronics using DNA Templates", the International conference on supramolecular chemistry, The 63<sup>th</sup> meeting of the Israel Chemical Soc., 1998, Tel-Aviv University, Israel.
- 16. "Self-Assembled Nanoelectronics using DNA Templates", the meeting of the Israel Institute of Chemical Engineering, 1998, Technion, Israel.
- 17. "Self-Assembled Nanoelectronics using DNA Templates", Chemical, Structural and Biomedical Applications of Supramolecular Systems, 1998, Tel-Aviv University, Israel.
- 18. "Solid State Proton-Transfer Processes: Site and Molecular Effects", The 4<sup>th</sup> Meeting on Proton-Transfer Dynamics, 1997, Tel Aviv, University, Israel.
- 19. "Site Selective Processes: Molecular and Supramolecular Effects in Thermally Activated and Photoinduced Proton-Transfer Processes", The 8<sup>th</sup> Gentner Symposium on Chemistry, 1996, Mainz, Germany.

#### Oral Presentations

- "Molecular and Supramolecular Effects in Photoinduced and Thermally Activated Proton-Transfer Processes" The XVI IUPAC Symposium on Photochemistry, 1996, Helsinki, Finland.
- Transport Through Liquid Membranes Using Metal Complexes as Carriers", The 55<sup>th</sup> Annual Meeting of the Israel Chemical Society, 1990, Tel-Aviv University, Israel.

# Invited Seminars

 "Proton Transfer Based Time-Temperature Indicators (TTIs)", the Department of Food Engineering and Biotechnology, Technion - Israel Institute of Technology, Nov. 4, 1999, Israel.



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- "Self-Assembled Nanoelectronics using DNA Templates", the Department of Physics, Bayer -Leverkusen, Aug. 23, 1998, Germany.
- "Site Selective Processes: Supramolecular Effects in Thermally Activated and Photoinduced Proton-Transfer Processes", The Department of Organic Chemistry, Tel Aviv University, June 17, 1998, Israel.
- 4. "Self-Assembled Nanoelectronics using DNA Templates", the Department of Chemistry, Technion - Israel Institute of Technology, Apr. 22, 1998, Israel.
- "Self-Assembled Nanoelectronics using DNA Templates", the Department of Biotechnology, Beer-Sheva University, Mar. 15, 1998, Israel.
- 6. "Self-Assembled Nanoelectronics using DNA Templates", Lehrstuhl für Experimentalphysik IV, Universität Bayreuth, Sept. 17, 1997, Bayreuth, Germany.
- "Self-Assembled Nanoelectronics using DNA Templates", the Department of Chemical Engineering, Technion - Israel Institute of Technology, Dec. 9, 1997, Israel.
- 8. "Site Selective Processes: Supramolecular Effects in Thermally Activated and Photoinduced Proton-Transfer Processes", the department of Inorganic Chemistry, The Hebrew University of Jerusalem, Dec. 9, 1996, Israel.